AMENDMENTS TO THE CLAIMS

1. (Presently Amended) A viscoelastic characteristic value-measuring apparatus comprising:

an input bar and an output bar arranged in a straight line to hold a specimen made of a viscoelastic material therebetween, wherein said length of said input bar is set to not less than 1500mm and not more than 2500mm, and said length of said output bar is set to not less than 500mm and not more than 2500mm;

first and second strain gauges installed on said input bar to measure an incident strain wave generated when a front end of said input bar is hit and a reflected strain wave; and

third and fourth strain gauges installed on said output bar to measure a transmitted strain wave transmitted from said input bar to said output bar through said specimen,

wherein said input bar and said output bar are made of a viscoelastic material; and

a length of said input bar is set so that the reflected strain wave is damped and a re-reflected strain wave is not generated.

2. (Previously Amended) The measuring apparatus according to claim 1, wherein the length of said output bar is relatively less than the length of said output bar.

3. (Original) The measuring apparatus according to claim 1, wherein said input bar and said output bar are made of a polymer.

4. (Original) The measuring apparatus according to claim 1, wherein said input bar and said output bar are made of a viscoelastic material whose viscoelastic characteristic value is different from that of the specimen in a small degree.

5. (Previously Amended) The measuring apparatus according to claim 1, wherein said first strain gauge is installed on said input bar at a front side thereof, and said second strain gauge is installed thereon at a rear side thereof, such that said first strain gauge is located between a position spaced at an interval of 10% of a whole length of said input bar from a rear end thereof and a position spaced at an interval of 70% of the whole length thereof from the rear end thereof and said second strain gauge is located between a position spaced at an interval of 8% of the whole length of said input bar from the rear end thereof and a position spaced at an interval of 62% of the whole length thereof from the rear end thereof.

6. (Previously Amended) The measuring apparatus according to claim 1, wherein said third strain gauge is installed on said

output bar at a front side thereof, and said fourth strain gauge is installed thereon at a rear side thereof, such that said third strain gauge is located between a position spaced at an interval of 4% of the whole length of said output bar from a front end thereof and a position spaced at an interval of 25% of the whole length thereof from the front end thereof and said fourth strain gauge is located between a position spaced at an interval of 8% of the whole length of said output bar from the front end thereof and a position spaced at an interval of 50% of the whole length thereof from the front end thereof.

7. (Original) The measuring apparatus according to claim 1, wherein an interval between said first strain gauge and said second strain gauge is set to a range from 200mm to 1200mm both inclusive; and an interval between said third strain gauge and said fourth strain gauge is set to a range from 30mm to 400mm both inclusive.

8. (Original) The measuring apparatus according to claim 1, wherein said input bar and said output bar are circular and have the same sectional area; and a diameter thereof is set to a range from 10mm to 30mm both inclusive so that the sectional area thereof is larger than that of said specimen by not less than 1.0 time and not more than three times.

9. (Presently Amended) A method of measuring a viscoelastic characteristic value, comprising the steps of:

providing a measuring apparatus having an input bar and output bar;

setting a length of said input bar such that a reflected strain wave generated in the input bar when the input bar is hit is damped and a re-reflected strain wave is not generated, wherein said length of said input bar is set to not less than 1500mm and not more than 2500mm, and said length of said output bar is set to not less than 500mm and not more than 2500mm;

making a base line value of a history of a strain wave zero by performing a zero correction at the rear end of said input bar and at the front end of said output bar;

hitting a front end of said input bar, with a specimen held between a rear end of said input bar and a front end of an output bar to generate a strain wave including an incident strain wave, the reflected strain wave, and a transmitted strain wave propagating in said input bar, said specimen, and said output bar;

measuring said incident strain wave and said reflected strain wave with first and second strain gauges installed on said input bar, and measuring a transmitted strain wave with third and fourth strain gauges installed on said output bar;

~~estimating a history of said incident strain wave at the rear end of said input bar, a history of said reflected strain wave at the rear end of said input bar, and a history of said transmitted strain wave at the front end of said output bar by using a history of said each strain wave;~~

computing a strain speed history of a specimen, a strain history thereof, and a stress history thereof from said estimated history of said incident strain wave, said history of said reflected strain wave, and said history of said transmitted strain wave and determining a stress-strain curve of said specimen; and

computing a viscoelastic characteristic value including Young's modulus or a loss factor, from said stress-strain curve.

10. (Original) The method according to claim 9, wherein the strain speed history of said specimen, the strain history thereof, and the stress history thereof are computed by using a viscoelastic constant of each of said input bar and said output bar to determine the stress-strain curve of said specimen.

11. (Original) The method according to claim 9, wherein a low-pass filter is used to perform a correction of removing a high-frequency wave having a frequency more than 10kHz from a strain wave measured with said first, second, third, and fourth strain gauges.

12. (Currently Canceled)

13. (Original) The method according to claim 9, wherein a relaxation time λ is derived by using a tangent at a predetermined point of an initial stage of a computed strain history of a specimen after a peak to correct said strain history after said predetermined point;

$$\epsilon(t) = \epsilon 0 \cdot e^{-t/\lambda} \text{ --- (1)}$$ and

where $\epsilon 0$ is a strain at the point of contact;

a relaxation time λ is derived by using a tangent at a predetermined point of an initial stage of a computed stress history of said specimen after a peak to correct said stress history after said predetermined point;

$$\sigma(t) = \sigma 0 \cdot e^{-t/\lambda} \text{ --- (2)}$$

where $\sigma 0$ is a stress at the point of contact.

14. (Original) The method according to claim 9, wherein a length of a specimen is set to a range from 1mm to 15mm both inclusive.

15. (Previously Amended) The method according to claim 9, wherein a front end of said input bar is hit with an impact bar at an impact speed of 1m/s - 70m/s.

16. (Previously Added) The measuring apparatus according to claim 1, further comprising:

an impact bar for hitting the front end of the input bar.

17. (Previously Added) The measuring apparatus according to claim 16, wherein the specimen includes a viscoelastic material having a viscoelastic characteristic that a maximum strain speed generated at the specimen is 500-8000 per second, when the front end of the input bar is hit with the impact bar at an impact speed of 1m/s - 70m/s.

18. (Previously Added) The measuring apparatus of claim 1, wherein the apparatus measures the strain generated at the specimen when it deforms in a relatively large amount and at a relatively high speed.

19. (Previously Added) The method according to claim 9, wherein the maximum strain speed generated at the specimen is 500-8000 per second, when the front end of the input bar is hit with a impact bar.

20. (Previously Added) The method of claim 9, wherein the viscoelastic characteristic value for the specimen is computed when

the specimen deforms in a relatively large amount at a relative high speed.

21. (Previously Added) The measuring apparatus according to claim 1, wherein the specimen has a characteristic maximum strain deformation amount in the range from 1% to 30%.

22. (Previously Added) The method according to claim 9, wherein the specimen has a characteristic maximum strain deformation amount in the range from 1% to 30%.

23. (Previously Added) The measuring apparatus according to claim 1, wherein said length of said output bar is set to not less than 500mm nor more than 2500mm, and said length of said input bar is set to not less than 1500mm nor more than 2500mm.

24. (Previously Added) The method according to claim 9, wherein said length of said output bar is set to not less than 500mm nor more than 2500mm, and said length of said input bar is set to not less than 1500mm nor more than 2500mm.